THE USE OF NANO PARTICLES TO ENHANCE RECOVERY OF WEST SIBERIAN OIL

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Title

SAGD Enhanced Oil Recovery

Objective

To thermally increase oil recovery in West Siberian Basin in an environmentally friendly way

Abstract

As conventional oil production becomes constrained, transportation fuels are being produced from other unconventional fossil resources such as bitumen deposits. According to the International Energy Agency's (IEA) World Energy Outlook 2001 these include oil sands, enhanced oil recovery, coal-to-liquids and gas-to-liquids synthetic fuels, and oil shale. Oil sands are a combination of clay and sand (80–85%), water (5–10%), and bitumen (10–18%), a heavy black dense, viscous mixture of high-molecular-weight hydrocarbons. Vast quantities of oil sands resources have been found worldwide. West Siberia basin has reserves of tar sands with primary recovery of about 20%.This shows Enhanced Oil Recovery is needed to increase recovery in an environmentally friendly way.

Method

The injection of nanoparticles is a promising and novel approach to enhancing oil recovery in both tar sands and depleted conventional fields and can further increase recovery rate of thermal methods of oil recovery. Nanoparticles have one dimension that is smaller than 100 nm and have many unique properties that are useful when it comes to oil recovery. The small size of nanoparticle allows them to easily pass through porous media. Experiments will be conducted to determine the extent to which recovery can be increased in West Siberian Oil using SiO2 Nano particles.

Conclusion

Thermal EOR can be very effective for producing heavy oil, as the method has a higher percentage of recovery.
The inclusion of additives in thermal oil recovery can further increase recovery rate.